

Amendments To The Claims:

Please amend claims 1, 3, 4, 9, 11, 15-21, and add claims 24-29, as set forth in the following listing of claims:

Listing of Claims:

1. (Currently amended) An apparatus for protecting occupants of ~~vehicles a~~ vehicle, said apparatus comprising:

an object detector configured to be installed within the vehicle and to monitor a position of an object relative to the vehicle;

a processor in communication with said object detector and configured to be installed within the vehicle and to determine a likelihood of a collision between the vehicle and the object based upon data received from the object detector and a calculated future path of the vehicle; and

a deployment device in communication with said processor and configured to be installed within the vehicle and to deploy a reversible physical safety countermeasure before the collision occurs if said processor determines that the collision is likely.

2. (Original) The apparatus of claim 1, wherein said processor is configured to determine a likelihood of a collision between the vehicle and the object occurring within less than 1 second after a present time.

3. (Currently amended) The apparatus of claim 1, wherein said deployment device is configured to:

deploy ~~at least one of~~ an irreversible physical safety countermeasure ~~and a reversible physical safety countermeasure~~ before the collision occurs if said processor determines that the collision is likely within a first time period after a present time; and

deploy a reversible physical safety countermeasure before the collision occurs if said processor determines that the collision is likely within a second time period after the present time.

4. (Currently amended) The apparatus of claim 3, wherein said ~~at least one of~~ ~~an irreversible physical safety countermeasure and a reversible physical safety countermeasure~~ ~~comprises an irreversible physical safety countermeasure if at least one of:~~ is deployed if
~~a closing rate between the vehicle and the object exceeds a threshold rate; and~~
a speed of the vehicle is above a threshold speed.

5. (Original) The apparatus of claim 3, wherein the first time period comprises a time period approximately between 0.3 and 0.5 second after the present time.

6. (Original) The apparatus of claim 3, wherein the second time period comprises a time period approximately between 0.5 and 1.0 second after the present time.

7. (Original) The apparatus of claim 1, wherein said object detector includes a radar-based device.

8. (Original) The apparatus of claim 1, wherein said deployment device is configured to deploy the physical safety countermeasure before the collision occurs if said processor determines that a probability of the collision is greater than 99%.

9. (Currently amended) The apparatus of claim 1, wherein the physical safety countermeasure is configured to at least one of ~~change a height of a bumper on the vehicle,~~ tighten a seat belt on the vehicle, apply a brake on the vehicle, ~~inflate an air bag on the vehicle,~~ and control steering of wheels of the vehicle.

10. (Original) The apparatus of claim 1, further comprising a vehicle movement detector in communication with said processor and configured to monitor movement of the vehicle, said processor being configured to determine a likelihood of a collision between the vehicle and the object based upon data received from the vehicle movement detector.

11. (Currently amended) A method of protecting occupants of vehicles, comprising the steps of:

sensing that a vehicle is likely to be involved in a collision occurring within less than 1 second after a present time, said sensing including calculating a future path of the vehicle;
and

deploying a safety countermeasure before the collision and in response to said sensing step.

12. (Original) The method of claim 11, wherein the sensing step includes monitoring a position of an object relative to the vehicle and sensing that the vehicle is likely to be involved in a collision with the object.

13. (Original) The method of claim 11, wherein the sensing step includes monitoring movement of the vehicle.

14. (Original) The method of claim 13, wherein the monitoring step includes monitoring at least one of vehicle speed, rate of change of vehicle speed, direction of vehicle movement, and rate of change of direction of vehicle movement.

15. (Currently amended) The method of claim 11, wherein the deploying step includes at least one of changing a height of a bumper on the vehicle, tightening a seat belt on the vehicle, applying a brake on the vehicle, ~~inflating an air bag on the vehicle~~, and controlling steering of wheels of the vehicle.

16. (Currently amended) A method of protecting occupants of a ~~vehicles~~ vehicle, comprising the steps of:

providing an object detector within the vehicle;

sensing that a vehicle is likely to be involved in a collision;

calculating a future path of the vehicle;

determining a likelihood of a collision between the vehicle and an object based upon data received from said object detector and the calculated future path of the vehicle; and

deploying a reversible physical safety countermeasure within the vehicle before the collision and in response to dependent upon said sensing determining step.

17. (Currently amended) The method of claim 16, wherein said ~~sensing~~ determining step comprises ~~sensing~~ determining that the vehicle is likely to be involved in a collision that will occur within less than 1 second after a time of the ~~sensing~~ determining.

18. (Currently amended) The method of claim 16, wherein the ~~sensing~~ determining step includes:

sensing that the vehicle is likely to be involved in a collision with an object; and
monitoring a rate of change of a position of the object relative to the vehicle.

19. (Currently amended) The method of claim 16, ~~wherein said comprising the further step of deploying step includes choosing at least one of a reversible physical safety countermeasure and an irreversible physical safety countermeasure, each of said step of deploying a reversible physical safety countermeasure and said step of deploying an irreversible physical safety countermeasure being dependent upon a time at which the collision is likely to occur.~~

20. (Currently amended) The method of claim 16, wherein the ~~sensing determining~~ step includes:

sensing that the vehicle is likely to be involved in a collision with an object; and
monitoring movements of both the vehicle and the object.

21. (Currently amended) The method of claim 16, wherein the ~~sensing determining~~ step includes:

calculating a plurality of factors related to movements of at least one of the
vehicle and an object;

calculating a decision rating based upon the factors; and
comparing the decision rating to a threshold value.

22. (Original) The method of claim 21, wherein the decision rating is
calculated as an average of the factors.

23. (Original) The method of claim 21, wherein the factors include at least one
of an offset from lane center based missed distance, a ratio of projected lateral movement to
required lateral movement, a radius of curvature of the vehicle, and a projected Y intercept.

24. (New) The method of claim 11, wherein said safety countermeasure
comprises a reversible safety countermeasure.

25. (New) The method of claim 11, wherein said sensing includes calculating
a plurality of location coordinates and times of arrival of the vehicle at each of the coordinates.

26. (New) The method of claim 21, wherein the factors include an offset from
lane center based missed distance.

27. (New) The method of claim 21, wherein the factors include a ratio of projected lateral movement to required lateral movement.

28. (New) The method of claim 21, wherein the factors include a radius of curvature of the vehicle.

29. (New) The method of claim 21, wherein the factors include a projected Y intercept.